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Studies of Human Body Lice, *Pediculus humanus corporis*

I. A Method for Feeding Lice Through a Membrane and Experimental Infection with *Rickettsia prowazeki*, *R. mooseri*, and *Borrelia novyi*

By H. S. Fuller, M. D., E. S. Murray, M. D., and J. C. Snyder, M. D.*

In critical laboratory studies of pathogenic organisms which are transmitted by various arthropods, it is frequently desirable to provide the vector with a meal of known composition. Methods have been devised for the artificial feeding of several groups of insects, but they have not been applied with uniform success to the body louse. A few of the many attempts which have been made to solve this problem were reviewed in the report of the "rabbit bleb" technique (*1*). The latter is a successful but somewhat expensive and cumbersome procedure. The purpose of the present paper is to describe a simple technique using a membrane of baby chick skin for the artificial feeding of human body lice, *Pediculus humanus corporis*, and to record infection of this species with three pathogenic microorganisms, *Rickettsia prowazeki*, *R. mooseri*, and *Borrelia novyi*, by the new technique.

Method

The method involves preparing a piece of skin from a baby chick, attaching this membrane to a small cylinder, placing the cylinder in a beaker containing the desired meal for the lice, and putting the lice onto the membrane. These steps are described below.

Preparing the Membrane. Most of our membranes have been prepared from chicks varying in age from 1 to 7 days. Although 1-month-old chicks are equally useful, the upper age limit which is satisfactory has not been determined; a single trial with the skin of

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an adult chicken was unsuccessful. The thickness of the skin may be the determining factor. Apparently the breed of chick is unimportant since we have used skin from several breeds including White Leghorn, and a mixed strain of undetermined origin. If it is inconvenient to use the skin soon after the chick is killed, the bird can be stored in the refrigerator for at least 7 days, possibly longer, and lice will feed quite satisfactorily through a membrane prepared from its skin. Uncontaminated, essentially sterile skin can be obtained by disinfecting the surface of an egg which is "approaching term" and allowing the chick to hatch under aseptic conditions. The chick is etherized and the down is removed from its side and breast. Plucking is inadvisable as the skin may be torn. Clipping is satisfactory, although if too much down remains it is difficult and time consuming to remove lice after they have fed. A depilatory containing barium sulfide has been used with success when the skin was washed after application; the residual odor apparently does not repel lice. When one is providing a meal containing pathogenic organisms, clipping is preferable since it avoids any possible deleterious effect of the depilatory upon the pathogen. Further preparation consists in swabbing the skin with 70 percent alcohol followed by acetone for partial cleansing and antisepsis.

Attaching Membrane to Cylinder. The prepared skin is then stretched over one end of a cylinder of glass, celluloid, or metal with the downy surface facing the inside of the cylinder. It may be attached before removal from the chick by use of Duco waterproof cement provided that sufficient time is allowed for the evaporation of volatile solvents which are toxic and/or repellent to lice. A metal ring is more satisfactory for attachment of skin to the cylinder because it can be sterilized and slipped under the skin through an incision, after which the cylinder is tightly clamped into the ring. A split ring with some degree of spring to it is quite useful for this purpose. Paraffin wax is applied to the junction of skin and cylinder to prevent leakage.

Placing Cylinder in Beaker Containing Desired Meal. The cylinder with membrane attached is then lowered onto the surface of a layer of blood or other liquid in a beaker. This must be done immediately, for the lice feed irregularly and unsatisfactorily through a membrane which has been allowed to dry beforehand. A light cylinder and membrane may float on the surface; a heavy cylinder may be supported on glass beads which are added to the blood in the bottom of the beaker. The beaker is placed in a water bath at 36° C. and lowered so that the surface of the blood is at least 1 inch below the level of the water. Suitable precautions are taken to prevent contamination of the material in the beaker.

Adding the Lice. Lice can be added immediately, either individually, or in numbers on a piece of felt. They are taken from a normal

laboratory-reared colony of human body lice [1] maintained in the customary fashion (*2*). The lice leave the felt and many begin to feed within 5 to 15 minutes. The majority of lice of all stages of development complete their feeding in 30 to 45 minutes after being placed in the cylinder. They are then removed and stored at 32° C. between feedings.

Method for Feeding Minute Meal. Under certain circumstances it may be desirable to feed a minute quantity of blood or other material to a single louse or to several lice in succession. For this purpose the stem of a small glass funnel is shortened to 4 mm. in length and the membrane of chick skin is then stretched over the stem. The funnel is supported by a wire triangle and lowered onto the surface of the droplet contained in the depression of a cavity slide which is warmed by water in a Petri dish. A glass tube of small caliber would serve the purpose. The funnel, however, is more easily manipulated.

Temperature and Pressure. Although Buxton (*3*) has suggested that it is important to present the blood meal under slight pressure if human body lice are expected to feed, we have observed that lice complete the act of feeding through the membrane during the same interval which is required for engorgement on the intact skin of man or rabbit. For this reason, we have not attempted to supply the meal under pressure in our experiments. The temperature of the water bath appears to be an important element in successful artificial feeding, 36° C. being the optimum. In one series of observations when the temperature fell below 35° C., the lice fed irregularly. A few were observed to feed when the bath was at 33° C. Temperatures higher than 36° C. induce excessive activity on the part of the lice, and they do not feed well.

Mixtures Ingested by Lice Through Membrane. Various mixtures have been ingested through the membrane. In one experiment a colony of normal lice was maintained for 14 days by feeding on defibrinated human blood. Single meals have been given to various batches of lice in which the material was heparinized human plasma, defibrinated human blood mixed with defibrinated rat blood, or defibrinated human blood mixed with yolk sac suspensions prepared in buffered saline. After a single meal of these mixtures the lice fed in the usual manner through the membrane on defibrinated human or rabbit blood *in vitro*, or on the intact skin of man or rabbit. It is interesting that laked human blood is readily ingested. This makes it possible to feed samples which have been stored at subfreezing temperatures and subsequently thawed. However, a meal of laked blood apparently tends to cause rupture of the intestine in a few of of the lice which feed upon this material. To allow for this loss,

[1] We are indebted to the U. S. Department of Agriculture, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine, Orlando, Fla., for specimens of their normal colony of human body lice from which we developed the colony used in these experiments.

several additional lice must be included in a particular batch in order to have an adequate number of survivors several days later.

Infection of Lice by Membrane Technique

Preliminary studies in the application of this technique have been promising. Batches of lice have been infected by the oral route with three pathogenic micro-organisms.

Rickettsiae. Artificial infection was accomplished by offering a single infective meal composed of defibrinated human blood mixed with a suitable dilution of a yolk sac suspension of the Breinl strain of epidemic typhus in one series of experiments and the Wilmington strain of murine typhus in another. After the initial infective meal, the batches of lice were fed once daily upon separate rabbits unless otherwise stated. Control lice which had fed upon a mixture of equal parts of defibrinated human blood and the buffered saline diluent were followed in the same manner.

R. prowazeki. In a preliminary experiment, smears of the intestines of lice were made 96 hours after the infective meal and stained by Macchiavello's method. The presence of relatively large numbers of typical rickettsiae in these smears indicated that multiplication had occurred in the lice. No rickettsiae were observed in the control lice.

A second batch of lice, mainly third instars, was offered a meal composed of defibrinated human blood mixed with an equal quantity of a yolk sac suspension of epidemic typhus rickettsiae diluted to 10^{-3} in buffered saline. After this infective meal, the lice were fed twice daily upon a rabbit. Smears of intestines of lice dying on the 4th, 5th, and 6th days following the infective meal showed massive infections with typical rickettsiae. On the 6th day, five lice were sacrificed separately and the intestines removed from the body. Smears of a portion of each intestine were positive. The remainders of the intestines were pooled and ground in buffered saline. The volume of the original suspension being 5 milliliters, the dilution was equivalent to 10^{-1}, since 10 lice per milliliter would be arbitrarily regarded as equivalent to 10^{0}. Serial ten-fold dilutions of this suspension were inoculated in dosages of 0.25 milliliters into cotton rats by the intra-abdominal route. When challenged 3 weeks later with the homologous strain, as described elsewhere (*4*), the final end-point of the immunizing dose was found to be approximately $10^{-6.5}$. This result provided evidence of multiplication of the rickettsiae within the lice, as well as evidence of their probable identity with the organisms contained in the original meal.

R. mooseri. In a preliminary experiment countless rickettsiae were observed in smears of the intestines of infected adult lice killed 120 hours after ingestion of an infective meal. No rickettsiae were observed in the control lice.

A second batch of lice, mainly third instars, was offered a meal composed of a yolk sac suspension of murine typhus rickettsiae, diluted to 10^{-2} in buffered saline, mixed with an equal quantity of defibrinated human blood. After this infective meal the lice were fed twice daily upon a rabbit. Smears of intestines of lice dying on the 6th, 7th, 8th, 11th, and 13th days showed massive infections with typical rickettsiae. On the 13th day, five lice were sacrificed separately and the intestines removed from the body. Smears of each intestine were positive. The remainders of the intestines were pooled and ground in buffered saline. Cotton rats were inoculated with serial ten-fold dilutions of this suspension as described above for lice infected with epidemic typhus. When challenged with the homologous strain the 50 percent end-point of the immunizing dose was found to be a dilution of 10^{-6}, providing evidence of multiplication of the rickettsiae within the lice, as well as evidence of their probable identity.

Borrelia novyi.[2] Another batch of lice was fed upon defibrinated human blood mixed with an equal volume of heparinized blood of a rat which had been inoculated intra-abdominally with *Borrelia novyi* 48 hours previously. The undiluted blood of this rat contained approximately one organism per erythrocyte in a Giemsa-stained smear. Control lice were fed upon defibrinated human blood mixed with an equal volume of normal rat blood. After the initial meal both the infected and control batches were maintained by single daily feedings through the membrane upon normal defibrinated human blood. The mortality rates in the two groups were comparable. Spirochetes were first demonstrated in Giemsa-stained smears of a louse crushed 72 hours after the infective meal. They were subsequently observed by dark-field examination in lice sacrificed daily from the 4th to the 8th day, when the experiment was terminated. Increase in numbers of spirochetes was apparently taking place, since dense bundles of very active organisms were frequently observed in fresh preparations. Furthermore, the organisms had definitely changed in appearance, becoming longer and more delicate than those observed in the blood of the infected rat. This phenomenon has been described by other workers using strains known to be infective for lice.

Discussion

The fact that most of the lice feed quickly after being placed on the membrane of chick skin is obviously advantageous. If it is desired to provide an infective meal containing estimated numbers of micro-organisms, this can be readily accomplished since there probably is little loss in viability of most micro-organisms in the short period

[2] We are indebted to Dr. Quentin M. Geiman, Assistant Professor of Tropical Diseases, Harvard School of Public Health, for supplying us with *B. novyi* and for technical advice and assistance in studying the infection in lice and in laboratory animals.

during which lice take a meal through the membrane. Another advantage of the technique is that the infectivity of the meal can be determined before and after feeding if this is desired.

Several applications of the technique have been considered, such as its usefulness in studying the effects of serial passage in lice on strains of rickettsiae and *Borrelia*. Further study may show the survival and multiplication of *B. novyi* in the body louse to be of significance with regard to the ultimate origin of this strain, for it has never been clear how the patient from whom the strain was recovered acquired his infection in the first place. The value of the method is being explored in relation to the detection of small numbers of rickettsiae, since it is possible that a louse may be infected by smaller numbers of rickettsiae than are required to induce immunity in the usual experimental laboratory animal.

Other applications of the method suggest themselves. We have maintained a small colony of lice for 2 weeks by artificial feeding and it seems possible that, with modifications, a colony might be maintained indefinitely in this manner. The method seems admirably suited to a study of the nutritional requirements of the human body louse. One might perform controlled investigations of the conditions under which lice will or will not feed. The effects of ingestion of various kinds of blood could be determined. One could easily study the effect of ingestion of blood containing measured quantities of toxicant drugs.

The principal disadvantage of the membrane technique lies in the difficulty of sterilization of skin of any sort.

Summary

A description is given of a simple technique for the artificial feeding and infection of the human body louse using a membrane prepared from the skin of a baby chick. Advantages and disadvantages of the technique have been described. Human body lice have been infected with *R. prowazeki*, *R. mooseri*, and *Borrelia novyi* by this method. Other applications of the technique are suggested, some of which are being investigated.

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Health Is Everybody's Business

By Mayhew Derryberry, Ph. D.*

Not so long ago, one of the outstanding leaders of public health said, "You know I used to think that the main purpose for bringing the community into the program was to get support for the activities we wanted to carry out." This statement typifies the public health thinking of a quarter of a century ago. Professional workers carefully studied the situation, developed a program which they considered good for the people, and then tried to obtain their support. Public health leaders were afraid to give citizens too much, if any, voice in the development of the program for fear they might want to do something the experts didn't think right. Frequently, such statements as the following were made: "Laymen get too enthusiastic and move too fast." "They are uninformed and demand things we can't do."

So long as the professional health workers could provide mass disease control through some activity of their own, like providing a clean and safe milk and water supply, or adequate sewage disposal, such an attitude did not detract from public health progress.

But today, the problems are changed, and the interests of citizens are becoming more intimately concerned with health. How to capitalize on this interest and bring about constructive group thinking and planning by the citizens is a major task for public health workers.

The problem has at least two important aspects:

1. How to involve large groups of people with varying backgrounds, interests and experience in working harmoniously together.

2. How to change the attitude of professional public health workers so that they will aid group thinking and planning by citizens for improvement of their own health.

Some suggestions for working out these two problems may be gleaned from the experimental programs conducted by social psychologists, adult educators, industrial relations officers, and workers in community organization and social group work.

1. The first and most important step in group planning by citizens is that the problem to be worked on should be selected by them, and be one that a majority of the members of the group feel is important

Too often in the past the problem has been one selected by professional workers. But are the people always interested in the prob-

* Chief, Division of Public Health Education, Public Health Service. This paper was read before the Annual Meeting of the Health Council of Greater New York, Inc., New York City, April 1949.

lems proposed by the public health profession? It is difficult to interest an individual in having a careful periodic medical examination for the protection of his health in the future when he has a throbbing toothache. Groups frequently can't be interested in preschool health programs when the filth around them is the problem that is disturbing them most. The immediate problem selected must be the one which the people recognize as important.

Sometimes the problem has been determined by a superficial annoyance of one citizen who is determined to dominate and have his problem solved, regardless of group concerns. This is not an easy situation to handle, but as groups become more skilled in working together, they will be able to avoid the pitfall of satisfying only a domineering citizen.

The most usual method of problem selection begins with a survey, sometimes conducted by experts, but preferably conducted by the citizens themselves. All too often, however, the completion of the survey, making of recommendations, and printing of the report (to adorn library shelves) are accepted as the solution of the problem. A recommendation is made that somebody else do something and through that method those who should take action wash their hands of any further responsibility. If surveys are to be used, the people should make the survey, or at least frame the recommendations for the action they will take.

The social psychologists suggest a problem census as the method for selecting a problem on which to work, that is, listing all the problems with which the various group members are concerned. Professional workers are always afraid that the laymen are not aware of the important problems. Actually in any such compilation made by interested citizens, the entire gamut of health problems will always be covered. From the listed problems priorities can be established through group decision.

2. *The goal to be achieved with reference to any problem must be realistic, and not visionary and entirely idealistic*

In determining a realistic goal, it is necessary to appraise carefully the resources available to the group. Individuals and organizations must be given the opportunity to define their own level of participation. How may of us have seen Mr. or Mrs. Fix-it who alienated many potential workers on a project by saying, "I have it all worked out. Mrs. Jones, you do this; Mr. Smith, your organization can do this." The hostile reactions to such a person need not be described. The only resources consistently available on any project are those that are volunteered. It is the job of the professional health worker to secure maximum volunteer participation.

Not only must the positive resources available be appraised, but there must also be a clear delineation of the factors in the situation that will interfere with achievement of the goal. For example, cultural and traditional food patterns need to be carefully considered in any program of improving nutrition. We learned this lesson in the war, and seldom now do we hear the comment in regard to immigrants' foodways, "I just can't get those people to eat an American diet." We learned then that the supplementation of the diets of various cultures was what was needed, rather than the standard (American) dietary pattern.

Another factor that must never be overlooked is organized opposition. Dr. Florence Sabin tells the story of her work in Colorado and how the people had worked for passage of a certain law. Because they had not foreseen that the law would be opposed by a particular group within the State, the law failed of passage. How to cope with pressure groups is a long story in itself, but as citizen groups gain more skill in democratic planning and action for the welfare of all the people, the influence of organized opposition will decline.

Still another consideration in the selection of a realistic goal is the need for some success early in the period of working together. It is far better to get a vacant lot cleaned up as a first step toward more vital citizen participation in health activities than to attempt to get every expectant mother under medical care when there are not sufficient doctors to give the care. The first success will give skill in working together so that more difficult problems can be attacked over longer periods of time.

Citizens can be aided in their selection of a realistic goal if they call in as technical advisers the professional experts in the field. The experts can give information, describe the limitations of various procedures, perhaps even suggest other goals, but they do not tell the citizens what to select.

3. The third step is the development of a workable plan

When all the people have been involved in both the selection of the problem and the definition of the goal, they naturally will be in on the planning. Too often the first time all the people are brought in is after the plan has been developed, either by a professional worker, a voluntary agency, or a dynamic community "do-gooder." One of the reasons for not including everyone during the development of plans is the desire for credit by those who take over the planning function. Recently a national organization, which shall be designated by "X," developed a plan suggesting that the local chapters should get the cooperation of all other interested agencies in communities in carrying out the plan, but also cautioning that the program must be kept an "X" organization project.

Perhaps we should take a hint from the Japanese Diet. It is said that each member of the Diet expresses his opinion as to how a given problem should be solved. Once having given his opinion, he no longer claims it as his own; it becomes the property of the group. From all the ideas proposed a plan is eventually adopted which represents a universal group decision. If the plan should fail, the group and not any one individual is responsible for its failure. It is too dangerous for an individual to be responsible for the plan, because a failure of the plan would require that the individual commit harakiri. In addition, the proposal is more likely to succeed because it has the backing of the entire group.

Ivah Deering in her book, Let's Try Thinking, says, "To think (a problem) through within and with the assistance of the group is to build under subsequent action a foundation which will stand greater storms and stresses, for it is made up of understanding, cooperation, and common effort." Therefore, if we want all the people to contribute more effectively to the total community health, we must find ways to let them do the planning.

4. The fourth step is action

Nothing is harder for a group to do than to get into action. Of course, if members of the group have been involved in the three enumerated steps above, they are much more likely to take action. Suggested aids for getting into gear are: (a) The group should commit itself both collectively and as individuals to do some specific thing; (b) there should be a time limit set; (c) the action to be taken should not require too long a time before the group reassembles to consider progress and further steps; (d) if possible every member should get some feeling of success.

5. The results of the action must be objectively evaluated

Quite often, and rightly so, at the completion of some project or community action there is a "success banquet." Such occasions serve a very valuable purpose, but should there not also be a much more soul-searching session? Perhaps the celebration is for publicity purposes, but if citizens are to get more skill in solving health problems, should they not be willing to look back objectively on past performance and evaluate it, not so much in terms of the actual achievement as in terms of the process they followed? What were the steps they took that were most helpful in achieving the goal, and what did they do that could be improved? Did they have too many meetings or too few? Did they move into action without adequate plans? Did they have the best technical advice they could obtain? Did they use it in the best manner and at the right time? Were all the people

aware of the problem, and did they have opportunity to participate in the planning as well as in the action? Only through such careful study (introspection, if you will) of the methods they used to work together, and the reactions of all the people towards the procedure and toward one another can they learn to increase the quality and amount of improvement in health through participation.

All the suggestions above have been directed primarily towards the ways in which citizens can effectively make health their business. Occasionally, reference has been made to the expert, or professional health worker, but only incidentally. Now let's turn our attention to those in that category and see what suggestions there are for them.

First, it may be said that the role professional workers play cannot be as clearly delineated. But there are some attitudes we should possess:

1. We must have faith, yes, even a conviction, that every citizen has a potential contribution to make for the betterment of his community. The quality and amount of the contribution may be great or small, but regardless of its magnitude or quality every opportunity should be given for the contribution to be made. It is our job to help uncover any hidden resources that may reside in people and to help them make their maximum contribution.

2. We must have faith in the democratic principle that the decisions of an informed majority are right. We must have that faith even though the decisions made by a group do not conform with our own opinions. If it is in our field of expertness, then we can only attribute the decision, which we may consider incorrect, as being our failure to provide adequate information, or if we are truly objective and honest, perhaps we would face the possibility that we might be wrong. Sometimes professional persons overlook the fact that they are subject to human errors of judgment.

3. We must have faith that a group thinking together and utilizing the contributions that all can make, can produce more and better results than can any one individual in the group working alone.

Even though we repeat that we have profound faith in the group, we often act as if we did not believe our own words. A reason for this inconsistency may be that most groups have not developed skill in the mechanics of working together productively. Furthermore, most individuals with training in special fields know very little about how to guide a group toward the expression of its ideas. Because professional leaders become over-protective, they often fail to give the group a chance to practice independent thinking. Our job is not merely one of making special resources of information available to others. Our job is also to help the group to work effectively. This is a problem all its own.

4. We must be sufficiently patient to let a group take such time as is necessary to arrive at its conclusions. If information is given too quickly, the group may be pushed into indecision.

5. We must develop insight and an understanding of interpersonal and intergroup relations so that we can help individuals and groups get satisfaction from their participation, and increase their own feeling of worth among their fellow men. The studies of social psychologists are constantly enriching our knowledge of human motivation. Again and again psychological research underlines the power of the need to be approved by one's associates.

6. We must coordinate our services and activities in order that we will not duplicate services or compete with one another in the field. Too few professional workers are available for us to waste their time and effort by using several persons to do what can be done by one with adequate planning. Certainly we should not tolerate duplication. Sharing responsibilities and services is one of the skills we must improve.

All over the country, citizens are becoming more and more concerned in the health of the Nation. A few suggestions for making that concern more productive in terms of community action, using the skills and abilities of all people, lay and professional, have been discussed. It is hoped that putting the suggestions in organized form might stimulate wider and more intensive activity in the future.

Summary

1. Wider group participation in planning for health is contingent upon (a) developing group experience in cooperative action, and (b) educating professional public health workers in methods of securing such action from groups.

2. Members of the group should select their own problems.

3. The group's goal should be defined realistically and achieved by a program that is practical.

4. The methods employed in securing group action should be analyzed when the program is completed.

5. Professional health workers must have sincere faith, practiced as well as voiced, in the worth of methods of democratic action.

6. They must increasingly strive to learn to deal with groups as an integral aspect of their own professional skills.

INCIDENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

REPORTS FROM STATES FOR WEEK ENDED SEPTEMBER 24, 1949

A decline was reported in the incidence of poliomyelitis from a total of 2,624 cases last week to 2,192 currently—a decrease of 432 cases, or approximately 16.5 percent. This is the largest percentage weekly decline recorded since the peak of incidence was reached with a total of 3,419 cases reported for the week ended August 20. A total of 1,606 cases, representing a decline of 12.7 percent, was reported for the corresponding week last year, and the 5-year median for the week is 1,158. Of the current total, 1,553 cases (70 percent) occurred in the New England, Middle Atlantic, and North Central areas. Decreases were recorded in all geographic divisions except the South Central. Increases, none more than 15 except in Texas and Wisconsin, and totaling 129 cases, were reported in 11 States.

The 26 States reporting 20 or more cases currently, are as follows (last week's figures in parentheses): *Increases*—Wisconsin 87 (64), Nebraska 51 (46), West Virginia 20 (18), Kentucky 47 (32), Arkansas 26 (25), Texas 90 (52), Utah 30 (18), Washington 44 (39); *decreases*—Maine 24 (50), Massachusetts 143 (165), Connecticut 32 (56), New York 288 (354), New Jersey 91 (127), Pennsylvania 59 (64), Ohio 125 (146), Indiana 35 (68), Illinois 135 (196), Michigan 170 (208), Minnesota 121 (150), Iowa 44 (64), Missouri 54 (60), Kansas 32 (51), Tennessee 22 (27), Oklahoma 43 (50), Colorado 33 (54), California 122 (127). The total for the year to date is 31,289, as compared with 17,646 for the corresponding period last year and a 5-year median of 13,570.

During the week, 1 case of smallpox was reported, in Montana, and 11 cases of Rocky Mountain spotted fever were reported, in 9 States. Of 23 cases of infectious encephalitis in 8 States, 13 were reported in North Dakota.

A total of 8,640 deaths was recorded during the week in 94 large cities in the United States, as compared with 8,508 last week, 8,079 and 8,201, respectively, for the corresponding weeks of 1948 and 1947, and a 3-year (1946–48) median of 8,201. The total for the year to date is 349,323, as compared with 351,463 for the corresponding period last year. Infant deaths totaled 709, last week 640, 3-year median 651. The cumulative figure is 24,857, same period last year 25,448.

Telegraphic case reports from State health officers for week ended September 24, 1949

[Leaders indicate that no cases were reported]

Division and State	Diphtheria	Encephalitis, infectious	Influenza	Measles	Meningitis, meningococcal	Pneumonia	Poliomyelitis	Rocky Mt. spotted fever	Scarlet fever	Smallpox	Tularemia	Typhoid and paratyphoid fever •	Whooping cough	Rabies in animals
NEW ENGLAND														
Maine	2			4		2	24		3				18	
New Hampshire							13							
Vermont				2			2							
Massachusetts				11	1		143		16				136	
Rhode Island							13						7	
Connecticut				6	1	28	32		2				32	
MIDDLE ATLANTIC														
New York	2		(•)	43	2	122	288	1	[d] 27			8	181	21
New Jersey	2		2	8	1	57	91		7			2	104	1
Pennsylvania	3		(•)	26	5	53	59		25		1	3	119	
EAST NORTH CENTRAL														
Ohio	5		1	16	2	18	125	1	35			11	79	10
Indiana	15	1	4	2		10	35		10			2	9	
Illinois	2	2		7	5	39	135		12		2	2	92	
Michigan •	3	1	5	28	2	56	170		24			2	141	1
Wisconsin				70		3	87		9				86	
WEST NORTH CENTRAL														
Minnesota	1			7	2	4	121		9				7	
Iowa				7		1	44		5				2	10
Missouri	9		1	3	3	21	54		6		2	8	8	
North Dakota	1	13	12	12			16		1				1	
South Dakota	1	1			2		18						2	
Nebraska			8	2		2	51		13				6	
Kansas			1	1		7	32		6				2	
SOUTH ATLANTIC														
Delaware					1				1				14	
Maryland •	1			4	1	11	[f] 18	2	[d] 8		1	2	42	
District of Columbia				1		5	3		1				4	
Virginia	6		110	5	1	33	13		24		1	3	15	4
West Virginia	11		8	13	1	4	20		9			7	2	
North Carolina	19			8	2		7	1	42			1	22	
South Carolina	6			1		10	5	1	5		1			4
Georgia	13		5		1	6	4		12		1	4		11
Florida	3		1	1		7	13		3		2	4	2	

EAST SOUTH CENTRAL														
Kentucky	5			2	2	11	47	1	19			6	21	2
Tennessee	5		26	8	4	29	22		28			7	16	
Alabama	14		12	4	1	31	8		16			1	1	8
Mississippi [a]	7		4	5		12	10		14			2	3	
WEST SOUTH CENTRAL														
Arkansas	4		1	1		9	26	2	1		6	2	8	1
Louisiana	3			9		12	14		2			5	1	
Oklahoma	2	1	31			11	43		1			1	1	
Texas	15		531	31	5	197	90		6			7	85	7
MOUNTAIN														
Montana	1		4	10			10			1				
Idaho	1		1	2		1	15	1	[d] 4				4	
Wyoming				2			7						1	
Colorado		3	9	2		9	33		3			1	9	
New Mexico	1			6		6	11		1			5	2	
Arizona			20	11		7	11						5	
Utah [a]			1	7		1	30	1	1		1		13	
Nevada	1				1									
PACIFIC														
Washington			3	25		6	44		13				15	
Oregon			7	9		10	13		5			3	18	
California	9	1	4	42	2	19	122		[d] 33			5	141	
Total	173	23	812	464	48	870	2,192	11	462	1	18	104	1,477	
Median, 1944–48	295	22	767	540	69		1,158	11	765	2	13	114	1,862	
Year to date 38 weeks	5,070	533	80,675	589,895	2,564	59,731	[1] 31,289	521	6,069	43	905	2,811	45,181	
Median, 1944–48	8,077 (27th)	455	194,853 (30th)	553,666 (35th)	4,735 (37th)		13,570 (11th)	489	89,992 (32nd)	279 (35th)	697	3,114 (11th)	74,147 (39th)	
Seasonal low week ends	July 9		July 30	Sept. 3	Sept. 17		Mar. 19		Aug. 13	Sept. 3		Mar. 19	Oct. 2	
Since seasonal low week	1,592		4,808	1,377	48		[1] 30,373		1,829	2		2,351	55,214	
Median, 1944–45 to 1948–49 [b]	2,361		4,656	1,569	60		13,307		3,697	6		2,639	100,643	

[a] Period ended earlier than Saturday.
[b] The median of the 5 preceding corresponding periods; for whooping cough, the corresponding periods are 1943–44 to 1947–48.
[c] New York City and Philadelphia only, respectively.
[d] Including cases reported as streptococcal infection and septic sore throat.
[e] Including paratyphoid fever; currently reported separately as follows: New York 1, Georgia 1, Florida 1, Mississippi 1, Louisiana 2, California 4. Cases reported as Salmonella infection, not included in the table, were as follows: New York 1.
[1] Poliomyelitis, delayed reports: Maryland, July, 1 case, August, 5 cases.
Alaska: Measles 9.
Hawaii Territory: Diphtheria 1, measles 1, lobar pneumonia 1, poliomyelitis 1. Deduction, poliomyelitis, 1 case reported week ended September 10.

884020—49

TERRITORIES AND POSSESSIONS

Panama Canal Zone

Notifiable diseases—July 1949.—During the month of July 1949, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Residence [1]									
	Panama City		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	12		6		13		7		38	
Diphtheria	4						1		5	
Dysentery:										
Amebic	2						6		8	
Bacillary			2		1		2		5	
German measles	1				1				2	
Hepatitis, infectious					2		2		4	
Influenza		1		1						2
Leprosy	1					1	1		2	1
Malaria [2]	1				15	1	45	2	61	3
Measles			3						3	
Meningitis, meningococcal		1								1
Mumps					2				2	
Pneumonia		9			26	2		8	[3] 26	19
Poliomyelitis							[4] 2		[4] 2	
Relapsing fever							2		2	
Tetanus	1								1	
Tuberculosis		18		4	3			7	[3] 3	29
Typhoid fever							2		2	
Typhus fever (murine)	4								4	
Yaws	1						1		2	

[1] If place of infection is known, cases are so listed instead of by residence.
[2] 2 recurrent cases.
[3] Reported in the Canal Zone only.
[4] The two poliomyelitis cases reported were contracted in Guatemala and flown to the Canal Zone for specific therapy.

Puerto Rico

Notifiable diseases—4 weeks ended August 27, 1949.—During the 4 weeks ended August 27, 1949, cases of certain notifiable diseases were reported in Puerto Rico as follows:

Disease	Cases	Disease	Cases
Chickenpox	20	Syphilis	55
Diphtheria	44	Tetanus	15
Dysentery	3	Tetanus, infantile	1
Gonorrhea	73	Tuberculosis (all forms)	344
Influenza	8,190	Typhoid fever	7
Malaria	16	Typhus fever (murine)	5
Measles	4	Whooping cough	98
Poliomyelitis	2		

FOREIGN REPORTS

CANADA

Provinces—Notifiable diseases—Week ended September 3, 1949.—During the week ended September 3, 1949, cases of certain notifiable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Newfoundland	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox			3		9	21	5	26	9	11	84
Diphtheria				2	1	1	1				5
Dysentery:											
Amebic								1			1
Bacillary					3	2					5
Encephalitis, infectious						1	6	1			8
German measles			4		2	6	1		6	1	20
Influenza			1			3	1				5
Measles	1		2		18	21	10	48	42	60	202
Meningitis, meningococcal			1		1	1		1			4
Mumps			26		3	35		21	5	7	97
Poliomyelitis	1		6	1	28	79	8	12	11	20	166
Scarlet fever				2	10	5	1	6	10	6	40
Tuberculosis (all forms)			5	6	106	20	73	13	27	24	274
Typhoid and paratyphoid fever					11	3		1	1	11	27
Undulant fever					1	1					2
Venereal diseases:											
Gonorrhea	6		14	9	87	76	26	22	59	90	389
Syphilis			2	10	84	23	8	10	8	8	153
Whooping cough	1				49	40	1		11	1	103

JAMAICA

Notifiable diseases—4 weeks ended August 27, 1949.—For the 4 weeks ended August 27, 1949, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis		1	Scarlet fever		1
Chickenpox	2	13	Tuberculosis (pulmonary)	38	59
Diphtheria	4		Typhoid fever	5	51
Puerperal sepsis		1	Typhus fever (murine)	1	

KOREA

Encephalitis.—According to information dated September 12, 1949, the Korean Health Ministry considered the recent outbreak of encephalitis in Korea (see PUBLIC HEALTH REPORTS, September 30, 1949) to have passed the peak about September 9, although the inci-

dence is still regarded as dangerously high. The total number of cases and deaths reported from the beginning of the outbreak through September 11, was 2,042 cases, 517 deaths, of which 821 cases, 104 deaths occurred in Seoul. Later information states that during the period September 12–18, 1,484 cases with 538 deaths were reported, including 320 cases, 20 deaths in Seoul.

NEW ZEALAND

Notifiable diseases—4 weeks ended August 27, 1949.—During the 4 weeks ended August 27, 1949, certain notifiable diseases were reported in New Zealand as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Cerebrospinal meningitis	13	1	Influenza	1	1
Diphtheria	12	1	Malaria	1	----
Dysentery:			Poliomyelitis	2	----
Amebic	6	----	Puerperal fever	2	----
Bacillary	2	1	Scarlet fever	73	----
Encephalitis, lethargic	1	----	Tuberculosis (all forms)	151	53
Erysipelas	11	----	Typhoid fever	9	----
Food poisoning	7	----	Undulant fever	4	----

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

Note.—The following reports include only items of unusual incidence or of special interest and the occurrence of these diseases, except yellow fever, in localities which had not recently reported cases. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday in each month.

Cholera

Burma—Bassein.—On May 8, 1949, the town and port of Bassein, Burma, was declared infected with cholera, due to an outbreak of that disease in refugee camps there. Cases and deaths reported since May 1 are as follows: May 1–31, 122 cases, 78 deaths; June 1–30, 36 cases, 12 deaths; July 1–10, 11 cases, 5 deaths. According to information dated August 23, 1949, as no new cases were reported after July 7, the town and port was declared free from cholera as of August 7, 1949.

Pakistan—Lahore.—During the week ended September 10, 1949, 9 cases of cholera were reported in Lahore, Pakistan.

Plague

Union of South Africa.—Plague has been reported in Union of South Africa as follows: In Cape Province—week ended August 27, 1949, 1 fatal case in Vanzylsrust Area, Kuruman District, week ended Septem-

ber, 3, 1 fatal case at Kop Farm, Gordonia District, week ended September 10, 3 cases, 2 deaths (pneumonic) at Goras Farm, Hay District; in Orange Free State—week ended September 3, 2 cases, 1 death, at LaRochelle Farm, Vredefort District.

Smallpox

Argentina—Buenos Aires.—During the week ended September 10, 1949, 11 cases of smallpox (mild type) were reported in Buenos Aires, Argentina.

Typhus Fever

Czechoslovakia.—Correction: The report of 24 cases of typhus fever in Czechoslovakia for the week ended August 13, 1949, (see PUBLIC HEALTH REPORTS, September 23, 1949) was in error. No cases of typhus fever were reported in Czechoslovakia during that week.

Spain.—During the week ended August 13, 1949, 2 cases of typhus fever, 1 fatal, were reported in Spain. The fatal case was reported in the city of Madrid.

Yellow Fever

Panama—Colon Province.—On September 10, 1949, 1 death from yellow fever was reported in Buena Vista, Province of Colon, Panama. This is the third case reported in the same area in a 6-week period.

DEATHS DURING WEEK ENDED SEPT. 17, 1949

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Sept. 17, 1949	Corresponding week, 1948
Data for 94 large cities of the United States:		
Total deaths	8,508	8,206
Median for 3 prior years	8,267	
Total deaths, first 37 weeks of year	340,683	343,384
Deaths under 1 year of age	640	609
Median for 3 prior years	701	
Deaths under 1 year of age, first 37 weeks of year	24,148	24,797
Data from industrial insurance companies:		
Policies in force	70,143,481	70,883,764
Number of death claims	11,757	12,812
Death claims for 1,000 policies in force, annual rate	8.7	9.5
Death claims per 1,000 policies, first 37 weeks of year, annual rate	9.2	9.5

Notifiable Diseases, Second Quarter, 1949[1]

The figures in the following table are the totals of the monthly morbidity reports received from State health authorities for April, May, and June 1949, and show the numbers of cases reported by the required reporting sources in the respective States. They are preliminary and are subject to correction by final reports. They may be assumed to represent the civilian population only, although in some instances a few cases in the military population may be included. The comparisons made are with similar preliminary reports; but owing to population shifts in many States since the 1940 census, the figures for some States may not be comparable with those for prior years, especially for certain diseases. Each State health officer has been requested to include in the monthly report for his State all diseases that are required by law or regulation to be reported in the State, although some do not do so. The list of diseases required to be reported is not the same for each State. Only a few of the common communicable diseases are notifiable in all the States. In some instances cases are reported, in some States, of diseases that are not required by law or regulation to be reported and the figures are included although manifestly incomplete. There are also variations among the States in the degree of, and checks on, the completeness of reporting of cases of the notifiable diseases; therefore comparisons as between States may not be justified for certain diseases. As compared with the deaths, incomplete case reports are obvious for such diseases as malaria, pellagra, pneumonia, and tuberculosis, while in many States other diseases, such as cancer, puerperal septicemia, rheumatic fever, and Vincent's infection, are not reportable. However, the figures are recorded as reported.

In spite of these and other deficiencies inherent in morbidity reporting, these monthly reports, which are published quarterly and annually in consolidated form, have proved of value in presenting early information regarding the reported incidence of a large group of diseases and in indicating trends by providing a comparison with similar preliminary figures for prior years. The table gives a general picture of the geographic distribution of certain diseases, as the States are arranged by geographic areas.

Leaders are used in the table to indicate that no case of the disease was reported.

Consolidated Monthly State Morbidity Reports for April, May, and June 1949

Division and State	Anthrax	Chickenpox	Conjunctivitis[2]	Diphtheria*	Dysentery, amebic	Dysentery, bacillary	Dysentery, undefined	Encephalitis, infectious	German measles	Hookworm disease	Influenza	Malaria[3]	Measles*	Meningitis, meningococcal*	Mumps	Ophthalmia neonatorum	Pellagra	Pneumonia, all forms
NEW ENGLAND																		
Maine	---	864	1	3	---	4	---	1	528	---	1,151	---	3,965	3	1,327	---	---	234
New Hampshire	---	146	---	---	---	---	---	---	298	---	15	---	1,366	4	417	---	---	33
Vermont	---	460	1	---	---	---	---	---	393	---	3	---	1,678	5	653	---	---	25
Massachusetts	---	6,696	---	124	1	7	---	7	2,918	---	---	4	7,581	12	3,407	37	---	---
Rhode Island	---	460	1	4	---	---	---	---	14	---	2	---	1,710	---	625	---	---	73
Connecticut	---	2,490	14	57	4	1	---	1	1,900	1	13	1	13,022	14	3,063	---	---	443
MIDDLE ATLANTIC																		
New York	11	11,840	4	61	207	202	---	29	9,614	49	12	6	27,171	74	4,229	6	---	3,016
New Jersey	1	14,981	---	37	36	18	---	7	5,847	---	31	6	21,498	18	3,683	1	---	620
Pennsylvania	5	8,750	---	79	2	3	---	5	2,221	---	22	---	26,341	66	6,541	9	---	1,035
EAST NORTH CENTRAL																		
Ohio	---	5,676	---	62	5	4	---	---	2,496	---	28	---	16,917	57	5,480	114	---	718
Indiana	---	903	23	64	2	---	---	9	951	---	11	---	2,287	7	611	---	---	87
Illinois	---	4,567	53	4	104	19	---	12	4,200	1	80	2	3,479	49	3,063	18	---	1,206
Michigan	---	6,252	249	32	126	22	---	24	5,585	13	18	---	8,543	28	2,664	3	---	581
Wisconsin	---	8,643	---	4	6	---	---	5	3,530	---	136	---	23,627	17	5,656	3	---	51

WEST NORTH CENTRAL																		
Minnesota		1,137		15	16	19	2			3	10	8	1,604	16				124
Iowa		939	80	6	6			3	91				1,091	6	1,135			26
Missouri	4	944	1	20			3	1			30	1	2,562	16	651			180
North Dakota		63	2	2				4			53		418	7				185
South Dakota		78	2	3	1				1				676	1	223			12
Nebraska		456		4	1			1		1	61		1,883	2	845			10
Kansas		962	31	8				2	589		32		6,320	10	764		2	172
SOUTH ATLANTIC																		
Delaware		130		1				1	1				467	1	36			11
Maryland		1,072	1	27	2	1	8	1	631		12	1	2,757	6	289	2	1	315
District of Columbia		739		8	1	4						1	1,028	8				163
Virginia		1,732		30	4		627	2			1,882	4	10,504	23	672		1	669
West Virginia		346		15					421		61		1,031	6	523	25		56
North Carolina				54	2	2		1				7	9,840	27				
South Carolina		1,000		48	35	125		11	252	440	3,705	46	6,556	13	1,903	5	117	1,384
Georgia		760	7	27	8	248	3	2		1,116	199	35	5,018	11	971		17	636
Florida		1,520		42	45	24		6	22	2,183	50	10	2,142	21	697	3		181
EAST SOUTH CENTRAL																		
Kentucky		335	5	35	1	5		3	360	33	22	4	3,430	43	650			328
Tennessee		662		27	50	16	2	5	217		503	10	4,549	38	1,033	3	10	708
Alabama		626		37	12			1	11		1,300	37	4,497	22	505		3	651
Mississippi				41	18	26		2		543		10	1,097	15		4		303
WEST SOUTH CENTRAL																		
Arkansas		411		30	78	41	45		222	2	516	138	5,574	12	668	1	1	429
Louisiana		185		30	309				2	155	60	5	563	29	109		1	457
Oklahoma		490		13	66	5	6	3	338	7	268	33	4,264	12	1,180		3	309
Texas		[7] 7,430		226	154	6,821	2,197	13				943	21,926	83	[7] 5,283	52		3,377
MOUNTAIN																		
Montana		378	19	1				1	948		32		2,303	3	131			19
Idaho		335	39	5	1				179		121		1,717	1	276			62
Wyoming		360	2	3				1	64		1		242	2	154			85
Colorado		1,324		13	1	14			593		125		2,967	9	644			213
New Mexico		259		8	3	2	6	1	98		8		1,330	4	150	4	2	202
Arizona		669		16	34	403	123		416		578	4	1,644	3	462	1		158
Utah		1,206		4	[8] 14	2		1	239		7	[8] 2	1,287	1	461			[8] 29
Nevada		97	17				7				18	1	569	2	10			19
PACIFIC																		
Washington		2,118	70	18	9		63	1	1,367		66		5,511	16	1,471			200
Oregon		[7] 882	38	9	23	76	6						2,665	11	[7] 1,053			241
California		17,158		108	92	88		8	8,306		146	5	19,528	64	15,636	4		[8] 402
Total	21	119,531	660	1,465	1,479	8,202	3,098	175	55,863	4,547	11,388	1,324	298,745	898	80,004	295	158	20,438
Second quarter 1948	18	113,339	452	1,777	1,185	5,878	2,691	115	8,909	4,839	17,977	2,788	326,736	856	103,782	215	341	19,601
Median 1944–48	12	108,042	[9] 429	2,353	809	8,148	1,905	115	13,623	4,121	21,338	14,363	289,419	1,407	73,375	384	1,075	22,628
Alaska		111							44		30		25	1	160			8
Hawaii Territory		889	19	3	1	16			51		15		1,741	1	246			[8] 7
Panama Canal Zone [10]		144		14	12	4			4		1	203	22	3	3			[11] 37

See footnotes on p. 1310.

Consolidated Monthly State Morbidity Reports for April, May, and June, 1949—Continued

Division and State	Poliomyelitis*	Rabies in man	Rheumatic fever	Rocky Mt. spotted fever	Scarlet fever*	Septic sore throat	Smallpox*	Tetanus	Trachoma	Trichinosis	Tuberculosis, all forms*	Tuberculosis, respiratory	Tularemia	Typhoid fever*	Paratyphoid fever	Typhus fever, endemic	Undulant fever*	Vincent's infection	Whooping Cough*
NEW ENGLAND																			
Maine	11		2		150	15					138	123		4	3		5		177
New Hampshire					132	21					48			1				6	82
Vermont	1				43	3								1				3	31
Massachusetts	40				1,686	22		3		3	793	740		13	9	1	8		1,136
Rhode Island	11		24		110	10				1	138	128		1	2				42
Connecticut	7				319	107		3		2	448	428	1	2	[14] 1		35		125
MIDDLE ATLANTIC																			
New York	33			2	[13] 2,001	([13])		4		52	3,975	3,664		23	[14] 17	1	38		1,902
New Jersey	26			10	1,015	51		4		10	842			6	13		13		749
Pennsylvania	17		258	8	2,251			1	1	1	1,306		3	30	[14] 14	1	197		1,138
EAST NORTH CENTRAL																			
Ohio	11		52	4	2,346	10		2	1	2				40			54	6	732
Indiana	14		11	4	500	8		4			641	389	9	12			15	2	210
Illinois	34	1	199	5	972	58		8	9	3	1,999	1,204	16	13		3	162	31	806
Michigan	27		227	1	2,966	419		5		2	1,295		1	9	[14] 13		59		419
Wisconsin	22				460	37					583	192	1	4			56		488
WEST NORTH CENTRAL																			
Minnesota	51		25		319	36		4			640		2	3	[14] 10		85		18
Iowa	26		3	2	158	16		2			273			1			98		34
Missouri	19			4	197	5	4	1	180		734		19	11	2		24		55
North Dakota	21		2		32						70	63	2	1	1		8	5	18
South Dakota	19			2	20		1		49		62	31		2			14	1	2
Nebraska	16				[13] 110	([13])			48		94			4			18	460	8
Kansas	19		6		119	2	3	2	2	1	245	183	1	4	1		35	11	81
SOUTH ATLANTIC																			
Delaware	12			2	70						89	89					1		20
Maryland	4		36	18	321	24				4	808	784		6			10	4	154
District of Columbia	3			1	69					1				2	5				17
Virginia	4		1	30	161	429				1	881	854	6	22	7	1	15		373
West Virginia	21		12		133	36			1		623	614		7	3		1		283
North Carolina	29			16	149	8					938	907	8	10	2	2	6		376
South Carolina	9		73	4	36	1,535		12			98		3	14	6	6	8		350
Georgia	16		19	6	93	35		3	1	1	800	669	18	17	25	47	46	10	66
Florida	48				68	27		21	12		1,055	1,055	8	17	[14] 34	20	20	21	40

EAST SOUTH CENTRAL																			
Kentucky	21	1	12	6	223	21	3	1	34	------	565	396	------	30	------	1	1	2	205
Tennessee	21	------	25	11	198	61	------	7	1	------	1,507	------	9	15	3	2	5	16	323
Alabama	37	------	------	2	88	------	------	8	------	------	600	------	4	18	1	35	16	------	139
Mississippi	56	------	17	2	52	------	3	6	------	------	778	755	10	13	2	4	17	------	89
WEST SOUTH CENTRAL																			
Arkansas	145	------	1	5	13	217	------	9	18	------	660	654	92	25	2	2	10	------	222
Louisiana	49	------	11	1	33	5	------	3	------	------	645	618	11	30	8	11	9	------	18
Oklahoma	137	------	18	5	70	109	2	2	55	------	674	665	16	10	[14] 2	------	37	165	37
Texas	571	------	------	1	333	1,272	4	------	8	------	1,387	------	24	77	17	90	99	------	1,482
MOUNTAIN																			
Montana	1	------	2	11	95	35	------	------	1	------	107	106	5	2	------	------	------	------	38
Idaho	34	------	11	5	29	100	------	------	------	------	23	------	------	5	2	------	11	12	31
Wyoming	5	------	55	12	20	1	------	------	2	------	13	1	9	2	1	------	------	------	7
Colorado	14	------	64	18	79	28	2	------	------	1	255	------	2	7	1	------	24	27	50
New Mexico	18	------	18	------	63	3	3	1	15	------	[9] 486	[9] 465	------	10	1	------	1	------	33
Arizona	14	------	35	------	80	358	1	1	89	------	604	569	------	9	3	------	8	------	103
Utah	[9] 34	------	18	[9] 3	68	33	------	------	------	------	[9] 48	[9] 44	8	[17] 1	------	------	[9] 26	------	300
Nevada	4	------	------	------	1	25	------	------	------	------	13	------	1	------	1	------	------	21	8
PACIFIC																			
Washington	27	------	76	------	270	21	------	2	------	------	587	------	1	1	[14] 2	------	6	31	163
Oregon	26	------	33	1	150	48	------	------	2	------	224	206	------	4	3	------	3	------	279
California	204	1	141	5	877	159	[15] 1	9	4	6	2,519	2,355	------	20	43	2	31	------	964
Total	1,989	3	1,487	207	19,748	5,410	27	128	533	91	31,311	18,951	290	568	[16] 260	229	1,335	834	14,423
Second quarter, 1948	1,790	9	1,338	178	22,637	4,348	12	96	387	171	37,531	19,638	285	725	192	260	1,307	436	21,934
Median, 1944–48	807	9	[9] 1,386	170	36,428	2,447	100	111	352	94	34,608	19,087	221	794	192	716	1,359	503	28,148
Alaska	------	------	------	------	4	5	------	------	------	------	250	236	------	------	------	------	------	------	------
Hawaii Territory	6	------	1	------	1	1	------	1	------	------	192	182	------	------	------	2	------	------	1
Panama Canal Zone	[10] 4	------	------	------	1	1	------	3	------	------	[11] 5	------	------	------	------	6	------	------	[11] 1

See footnotes on p. 1310.

Footnotes for table on pages 1306 to 1309

*On the basis of information in the latest compilation of the reportable diseases in the several States (Pub. Health Rep., 59: 317–340, Mar. 10, 1944. Reprint No. 2544), diseases marked with an (*) are reportable by law or regulation in all States and the District of Columbia. Typhoid fever is reportable in all States, and paratyphoid fever in all but 6 States. A few States have begun to report paratyphoid fever as "salmonellosis." Syphilis is reportable in all States but is not included in the table, as more complete reports are issued later by the Division of Venereal Disease Control. Some States have increased and some have reduced the list of reportable diseases since the latest compilation cited above.

[1] For report for first quarter of 1949 see p. 927 of the PUBLIC HEALTH REPORTS for July 22, 1949.

[2] Includes cases of kerato- and suppurative conjunctivitis and of pink eye.

[3] In a few States practically all cases contracted outside continental United States.

[4] New York City only.

[5] Exclusive of 10 cases of artificially induced malaria.

[6] Lobar pneumonia only.

[7] Figures taken from Weekly Mail Reports.

[8] Includes nonresidents.

[9] 4-year average, 1945-48.

[10] Includes the cities of Colon and Panama.

[11] In the Canal Zone only.

[12] Includes septic sore throat.

[13] Included in scarlet fever.

[14] Reported as "salmonella infection".

[15] Cases in New York State reported as "salmonella infections, including paratyphoid fever"; cases in New York City reported as "paratyphoid fever".

[16] Includes cases reported as salmonella infection.

[17] Nonresident.

[18] Imported.

The following list includes certain rare conditions, diseases of restricted geographical distribution, and those reportable in or reported by only a few States; last year's figures in parentheses (where no figures are given, no cases were reported last year, or the disease was not included in last year's published tabulation):

Actinomycosis: New Hampshire 1, New York 1 (2), Minnesota 1 (1), South Dakota 1 (3).
Botulism: Tennessee 1.
Cancer: Pennsylvania 1,979, North Dakota 172 (201), Kansas 1,035 (952), South Carolina 248 (423), Georgia 76 (49), Florida 552 (551), Kentucky 8 (2), Tennessee 924 (654), Alabama 1,059 (840), Arkansas 195 (193), Louisiana 583 (439), Montana 374 (198), Idaho 136 (248), Wyoming 119, Colorado 877, New Mexico 178 (144), Utah 46 (65), Nevada 1 (4).
Chagas disease: Panama Canal Zone 2.
Coccidioidomycosis: Arizona 18 (1), California 23 (16).
Colorado tick fever: Colorado 84 (52).
Dengue: South Carolina 2, Texas 18.
Dermatitis: New Hampshire 3 (31), Missouri 5 (5), Kentucky 17 (80) mycotic, Arkansas 1.
Diarrhea: Maine 1, New York 96 (14), Pennsylvania 34 (55) includes enteritis, Ohio 139 (126) includes enteritis, Indiana 1 (9), Illinois 12 (5), Michigan 18 (14), Minnesota 2 includes enteritis, Iowa 6, Maryland 10 (7), West Virginia 4 (1), South Carolina 2,606 (2,548), Florida 43 (38), Kentucky 1 (3), Oklahoma 1 (2), Texas 863, Idaho 31 (85) includes enteritis, New Mexico 12 (12), California 1 (12), Alaska 5 (25) includes enteritis.
Dog bite: Massachusetts 4,397, Pennsylvania 2,139, Illinois 4,977 (4,979) (and other animal bites), Michigan 3,386 (3,489), Arkansas 208 (248) (all animal bites).
Erysipelas: Connecticut 9 (6), Pennsylvania 21, Ohio 9 (8), Indiana 5 (4), Illinois 52 (48), Michigan 28 (27), Wisconsin 17 (17), Minnesota 2, Iowa 1, Missouri 1, North Dakota 2 (5), South Dakota 2 (3), Kansas 2 (3), Florida 5 (9), Tennessee 4 (5), Arkansas 5 (3), Montana 4 (4), Idaho 6 (3), Wyoming 1, Colorado 7 (13), Arizona 1, Utah 1 (1) Washington 6 (5) Oregon 18 (7), Alaska 2.
Food poisoning: Maine 57 (10), New York 188, Ohio 8 (4), Indiana 2, Illinois 271 (29), Minnesota 358 (34), Kansas 9, Florida 3, Louisiana 3 (2), Oklahoma 29 (50), Montana 2, Idaho 2, Colorado 1 (5), New Mexico 4 (6), Nevada 29, Washington 23 (20), Oregon 20, California 131 (246).
Granuloma inguinale: Florida 212 (182), Kentucky 1 (5), Tennessee 21 (20), Mississippi 36 (66), Louisiana 36 (43), California 4.
Granuloma unspecified: Connecticut 4.
Histoplasmosis: Tennessee 2.
Impetigo contagiosa: Connecticut 3, New York 42, Ohio 71 (5), Indiana 4 (1), Illinois 12 (3), Michigan 221 (247), Kansas 1 (2), Kentucky 11 (8), Montana 3, Idaho 3 (9), Wyoming 4 (4), Colorado 6 (15), Nevada 28 (34), Washington 101 (112), Hawaii Territory 15 (8).
Jaundice (including hepatitis and Weil's disease): Maine 2 (1), New York 101 (64), Pennsylvania 101 (14), Ohio 1 Weil's disease, Indiana 1, Illinois 9 (2), Michigan 5 (3), Minnesota 4 (6), Maryland 4 (1), South Carolina 3, Florida 2 (55), Kentucky 13 (38), Tennessee 9 (11), Montana 6, Idaho 3 (2), Nevada 1, Washington 1 (2), Oregon 3 (1), California 233 (11), Hawaii Territory 1 (2), Panama Canal Zone 8 (12).
Lead poisoning: New Hampshire 1.
Leprosy: New York 5 (3), Illinois 1, Texas 1 (3), California 1 (6), Hawaii Territory 12 (8), Panama Canal Zone 1 (2).
Lymphocytic choriomeningitis: Minnesota 1, Tennessee 2 (1), Montana 1.
Lymphogranuloma venereum: Connecticut 5, Florida 37, (38), Kentucky 2 (2), Tennessee 20 (17), Mississippi 42, Louisiana 25 (38), Utah 1 (nonresident), California 26, Alaska 1.
Moniliasis: Minnesota 1.
Mononucleosis: Connecticut 26 (22) Michigan 44 (38), Minnesota 96 (49), Maryland 2 (4), South Carolina 29, Kentucky 9 (4), Tennessee 6 (11), Oklahoma 5 (1), Idaho 1 (13), Arizona 2, Washington 3.
Psittacosis: Michigan 2 (3), California 2 (1).
Puerperal septicemia: New York 3, Pennsylvania 3, Mississippi 2 (1), New Mexico 1.
"Q" Fever: Idaho 6, Colorado 1.
Rabies in animals: Massachusetts 1, Connecticut 3, New York 63 (118), New Jersey 9, Ohio 185 (164), Indiana 251 (287), Illinois 25 (53), Michigan 64 (94), Wisconsin 2 (1), Iowa 82 (13), Kansas 1 (2), Virginia 19 (37), South Carolina 48 (62), Georgia 129 (90), Florida 13 (75), Kentucky 164 (73), Alabama 117 (114), Arkansas 36 (21), Louisiana 12 (26), Oklahoma 41 (41), Texas 290 (360), California 44 (80).
Rat bite fever: Tennessee 3.
Relapsing fever: Texas 4, (16), Panama Canal Zone 1 (2),
Rickettsialpox; New York 35 (60).
Ringworm of the scalp: Connecticut 31, Ohio 12, Indiana 13, Illinois 578, Minnesota 1, Iowa 1, Missouri 11, Kansas 28, Maryland 1, Virginia 4, Georgia 33, Kentucky 221, Oklahoma 15, Montana 1, New Mexico 3, Utah 12, Nevada 10, Oregon 14. Ringworm disease, unspecified: Michigan 513, Idaho 8, Washington 122.
Scabies: Vermont 1, Ohio 51 (14), Michigan 189 (215), North Dakota 3 (5), Kansas 1 (2), Maryland 1 (1), Kentucky 34 (47), Montana 5 (2), Idaho 22 (28), Nevada 10, Alaska 2 (4).
Schistosomiasis: New York 10 (6).
Silicosis: New Hampshire 1, Arkansas 4 (3), Idaho 1, Colorado 2 (1), New Mexico 1 (5), Utah 1.
Yaws: Panama Canal Zone 5 (1).

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